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EXECUTIVE COMMITTEE

Agenda Item 23: Innovation in Aviation

ENHANCING INNOVATION IN AVIATION

(Presented by International Partners for Aviation Development, Innovation and Sustainability (iPADIS))

EXECUTIVE SUMMARY

This paper recalls the significant impact of innovation in the historical development of civil aviation and the ongoing rapid innovation taking place in all aspects of the civil aviation sector. It emphasizes that in addition to enhancing aviation safety, security and efficiency as well as modernising aviation infrastructure innovation, is helping to meet the aviation industry's environmental goals and broaden the benefits of aviation to civil society and businesses. Innovation also benefits developing and emerging economies in leapfrogging outdated and costly legacy aviation systems and in bridging historical technological gaps.

The paper calls on States to implement national development plans and civil aviation policies that promote innovation and encourage new entrants to the aviation industry. It discusses fundamental principles to guide innovation and urges regulators to embrace innovation in their regulatory processes. It encourages States to share experiences among themselves and with the International Civil Aviation Organization (ICAO). The paper urges ICAO to take the lead in providing timely guidance to member States and industry as well as ensuring more effective consultation with new entrants and organisations representing users.

The Assembly is invited to consider the recommendations contained in this paper.

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objective - <i>Safety and Economic Development of Air Transport.</i>
<i>Financial implications:</i>	
<i>References:</i>	

1. INTRODUCTION

1.1 Powered flight is one of humanity's most amazing accomplishments and innovation has always been a hallmark of aviation since the very first aircraft were even conceived. Innovation helps to enhance aviation safety, security and efficiency and to modernise aviation infrastructure as well as broaden the benefits of aviation to civil society and businesses.

1.2 iPADIS promotes innovation and access to information and knowledge among States for the development of efficient transport systems and sustainable communities everywhere.

1.3 Rapid innovation is taking place in all aspects of the civil aviation sector. These include unmanned aerial vehicles (UAV) or drones; urban air mobility; spaced-based Automatic Dependent Surveillance Broadcast (ADS-B) and remote/digital towers in air traffic management; use of e-passports, biometrics and contactless technology to facilitate air passenger travel; e-air waybills and e-commerce; and cyber security as well as application of big data, fintech, the internet of things, machine learning, artificial intelligence, and block-chain; and other emerging technologies.

1.4 Innovation is a key enabler in meeting the aviation industry's environmental goals through the development and deployment of innovative green aviation technologies such as electric and solar-powered aircraft, new sustainable aviation fuels and other climate change mitigation and adaptation strategies.

1.5 Innovation is benefiting developing and emerging economies in leapfrogging outdated and costly legacy aviation systems and in bridging historical technology gaps. The use of drones also broadens direct access to aviation to those segments of society that may never fly by plane or travel through airports: Drones are now supporting local businesses and societies through:

- Delivery of blood, medical supplies, vaccines and parcels,
- Monitoring of oil and gas operations and pipelines,
- Monitoring land and maritime border movements and security,
- National security management against terrorism, kidnaping, banditry and piracy,
- Agricultural crop spraying, animal husbandry and wildlife management,
- Aerial shows, video and photography; and
- Accident/disaster site aerial surveillance, firefighting and other emergency situations.

1.6 As innovations bring new benefits to society, there are also new challenges. For example, drone and urban air mobility operations expand the scope of civil aviation beyond the traditional aircraft-airport-airspace operating environment with attendant challenges concerning safe and efficient interaction of these new operations with regular air traffic; UAV traffic management; regional and urban planning; protection of national security; and assurance of public safety, security, privacy, liability, and the like.

2. INNOVATION POLICY AND REGULATORY SERVICES

2.1 National development plans and civil aviation policy should promote innovation and encourage intersectoral synergies. Administrators should keep an open mind and be receptive to new ideas, support new entrants and start-ups as well as facilitate innovation networks, incubators and accelerators.

2.2 New and innovative technologies should be guided by critical fundamental principles, including intellectual honesty; technical, economic, social, ecological and environmental advancement; respect for human rights, privacy and protection for personal information and data; ethics; and equality of access and non-discriminatory application.

2.3 A significant number of current innovations in civil aviation are being researched, developed and driven by new actors, and many of the technologies and applications are adapted from other sectors. The civil aviation ecosystem now includes these new entrants as well as other stakeholders that represent the views of the users and the public. They should accordingly be part of government consultations in the development and implementation of new policies and regulations guiding innovation.

2.4 For innovation to thrive, government policy decision makers and regulators would need to also support and implement innovation in regulatory services. The introduction of new initiatives and innovative technologies should be seen as an opportunity for regulators to develop new skills while rule-making processes should be adapted to respond to the pace of ongoing innovations.

2.5 Regulators should, where possible, adapt existing ICAO Standards and Recommended Practices (SARPs) or develop new regulations as may be required to ensure appropriate safeguards for safety, security, privacy, liability, and other risks. For example, noting that the acceptable level of safety for a small drone may not be same as for a passenger airplane, regulators should be diligent but pragmatic in their approach so as not to stifle innovations that would add significant value to society and to lives and livelihoods of people.

2.6 National administrations should share their experiences with ICAO and other Civil Aviation Authorities (CAAs). They should seek opportunities for regional cooperation as drones and many other technologies are increasingly being employed in cross border operations. ICAO should develop relevant SARPs and provide regular guidance to member States as required.

3. CONCLUSION

3.1 Innovation is playing a key role in the improvement of aviation safety, security, efficiency, environmental sustainability and facilitation. It expands the benefits of civil aviation to society and businesses beyond traditional air transport users. Governments should support innovation and make it part of their National Development Plans while addressing any challenges and risks with appropriate policies and proportionate regulations.

3.2 ICAO should lead and provide member States and industry with timely SARPs and guidance on new innovative technologies as well as in the implementation of necessary changes in rule-making processes. ICAO and States should establish more effective consultation with new entrants and organisations representing the interests of users to ensure the development and implementation of appropriate policies and regulations on innovation.